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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/987,351 | 11/14/2001 | Kazuhisa Sato | 107348-00170 | 6954 |

4372 7590 03/24/2004

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| EXAMINER |
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PHASGE, ARUN S

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1753 | |

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,351

Applicant(s)

SATO, KAZUHISA

Examiner

Arun S. Phasge

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-6, 8-10, 12-14, 16-18, 20-22, 24-32 is/are rejected.
- 7) ☒ Claim(s) 3, 7, 11, 15, 19 and 23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Applicant is advised that the Notice of Allowance mailed 10/09/03 is vacated. If the issue fee has already been paid, applicant may request a refund or request that the fee be credited to a deposit account. However, applicant may wait until the application is either found allowable or held abandoned. If allowed, upon receipt of a new Notice of Allowance, applicant may request that the previously submitted issue fee be applied. If abandoned, applicant may request refund or credit to a specified Deposit Account.

Prosecution on the merits of this application is reopened on claims 1-32 considered unpatentable in view of the newly discovered reference(s) to Chiarelli, U.S. Patent 4,040,566, Jacobi et al., U.S. Patent 4,326,013, Born, U.S. Patent 5,500,835, Narayanan et al., U.S. Patent 6,299,744 B1. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 112

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 is still unclear, even after the agreed upon changes of January 8, 2004, since the metes and bounds of the claim cannot be readily ascertained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 4-6, 17-18, 20-22, 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (Sasaki), U.S. Patent 5,484,512 in view of Chiarelli, U.S. Patent 4,040,566.

With respect to the apparatus claims, Sasaki discloses the claimed hydrogen station comprising a water electrolyzer for producing hydrogen containing

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moisture, a first dewatering device capable of capturing the moisture from the hydrogen to provide hydrogen in a dry state, a second dewatering device adapted to replace said first dewatering device when the function of the first dewatering device has been declined with an increase in amount of moisture captured, and regenerating equipment for regenerating said first dewatering device after being replaced, thereby recovering the water-capturing ability thereof (see figure 5 and col. 6, line 63 to col. 7, line 13). The reference does disclose the heat regeneration of the dewatering device (see col. 7, lines 8-12). The process limitations directed to the regenerating equipment have been given little or no patentable weight, since they do not have a corresponding structure recited in the claim.

The Sasaki patent does not disclose that the power source is a photovoltaic generator, or a tank for storage of the hydrogen in the dry state and thus that the tank is designed to be pressure-proof in order to store compressed hydrogen.

The Chiarelli patent is cited to show the use of a photovoltaic generator to provide a power source for uses such as the electrolysis of water to obtain hydrogen and oxygen (see Abstract). The reference further teaches the need for storage means, such as a tank that has been designed to be pressure-proof in order to store compressed hydrogen (see col. 7, lines 5-23).

Consequently, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Sasaki patent with the teachings of the Chiarelli patent, because the Chiarelli patent teaches the use of a photovoltaic generator as the power source and the storage of the gaseous hydrogen under pressure in tanks.

With respect to the method claims, the Sasaki patent discloses the process for operating a hydrogen station comprising an external power supply, a water electrolyzer that produces hydrogen containing moisture with electric power, a plurality of dewatering devices that capture moisture from said hydrogen to provide hydrogen in a dry state, and regenerating equipment adapted to regenerate said dewatering device to recover the water-capturing ability thereof (see figure 5 and col. 6, line 63 to col. 7, line 13).

The reference does not disclose a tank for storage of the hydrogen in a dry state, the use of a photovoltaic generator to provide the electric power. The Sasaki patent further does not disclose the process step of estimating a power-generating time and amount of electric power generated in said photovoltaic generator to determine what or how much of a particular process can be run using the electric power generated by the photovoltaic generator.

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The Chiarelli patent is cited to show that such use of estimation and supplemented power supply by a photovoltaic generator in conjunction with a secondary source of power, such as batteries, ac source etc (see col. 7, lines 25-66). The reference further teaches that on a cloudy day, the power output must be supplemented by another power source (see col. 7, lines 39-42).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Sasaki patent with the teachings of the Chiarelli patent, because the Chiarelli patent teaches the control of the electric power source and using supplemental power supplies based upon such factors as the weather forecast and the amount of electricity needed.

Claims 8-10, 12-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Chiarelli as applied to claims above, and further in view of Jacobi et al, (Jacobi), U.S. Patent 4,326,013.

The Sasaki patent does not disclose that the power source is a photovoltaic generator, or a tank for storage of the hydrogen in the dry state and therefore does not disclose that the tank contains a hydrogen absorption material.

The Jacobi patent is cited to show the use of a photovoltaic generator for the power supply for uses such as the electrolysis of water to form hydrogen and

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oxygen (see abstract). The reference further teaches the storage of the hydrogen in a tank containing a hydrogen absorption material, such as metal hydride (see Abstract).

Consequently, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Sasaki patent with the teachings contained in the Jacobi patent, because the Jacobi patent teaches the use of a photovoltaic generator as the power source and the use of the metal hydride containing tank to store the hydrogen produced by the electrolysis of water.

Claims 3, 7, 11, 15, 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Chiarelli as applied to claims above, and further in view of Narayanan et al. (Narayanan), U.S. Patent 6,299,744 B1.

The Sasaki patent does disclose the regeneration of the moisture adsorption unit by heating the unit to evaporate and release the moisture adsorbed. The reference does not disclose that the moisture containing gas is treated to remove the moisture to obtain a dry gas.

The Narayanan patent is cited to show that a condenser is routinely used in the art to remove moisture from hydrogen gas (see figure 3 and col. 10, lines 24-33). Therefore, the invention as a whole would have been obvious to one having

ordinary skill in the art at the time the invention was made to modify the disclosure of the Sasaki patent with the teachings of the Narayanan patent, because the Narayanan patent teaches that removal of moisture from hydrogen gas is routinely accomplished by condensation to provide dry hydrogen gas.

Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Chiarelli as applied to claims above, and further in view of Born, U.S. Patent 5,500,835.

The combination of Sasaki patent with the Chiarelli patent fails to disclose the use of atmospheric pressure sensor to obtain data on the weather, such as cloudy skies. The Born patent is cited to show the use of an atmospheric pressure sensor to obtain data on the weather (see abstract).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to use a known process of obtaining weather information in the process disclosed by the combination of the Sasaki and Chiarelli patents, because the Born patent teaches that such information from an atmospheric pressure sensor provides a prediction on the weather.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun S. Phasge whose telephone number is (571) 272-1345. The examiner can normally be reached on MONDAY-THURSDAY, 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Arun S. Phasge
Primary Examiner
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